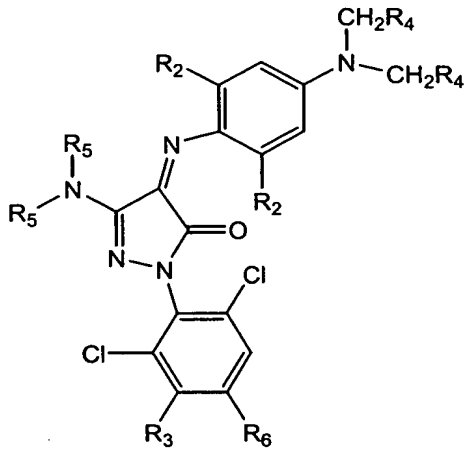
CLAIMS

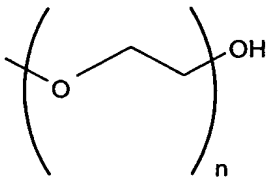
What is claimed is:

1. A magenta ink for ink-jet printing, comprising a dye having a structure as follows:



R2 is selected from the group consisting of methyl, ethyl, propyl, isopropyl and halogen;

R3 is selected from the group consisting of H, SO_3H, COOH, and a polyether group



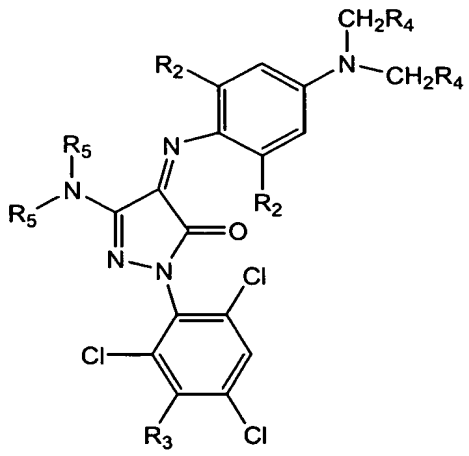
where n is from 2 to 100;

R4 is selected from the group consisting of H, SO_3H, COOH, CH_2SO_3H, CH_2COOH, $C_2H_4SO_3H$ and C_2H_4COOH;

R5 is selected from the group consisting of ethyl, propyl, isopropyl, phenyl, substituted phenyl, and R4; and

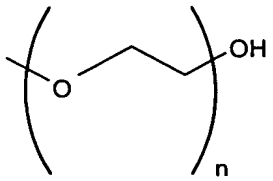
R6 is selected from the group consisting of H, halogen, methyl, amino, substituted amino, R4 and R3.

2. A magenta ink according to claim 1, wherein the dye has a structure as follows:



R2 is selected from the group consisting of methyl, ethyl, propyl, isopropyl and halogen;

R3 is selected from the group consisting of H, SO_3H, COOH, and a polyether group

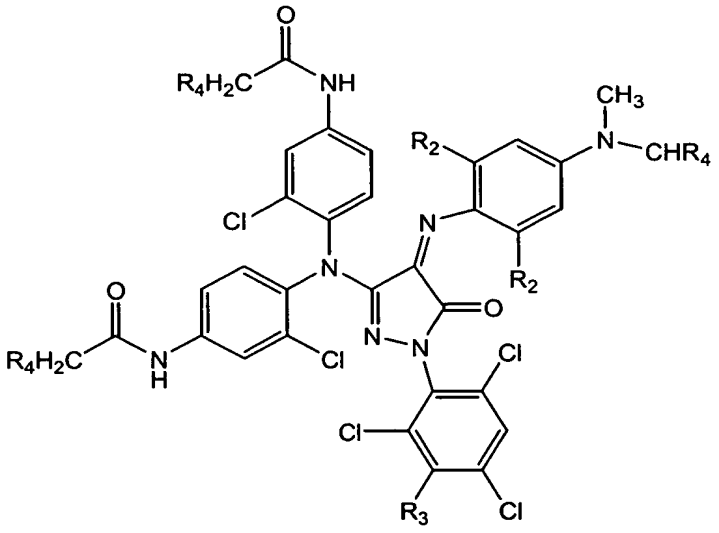


where n is from 2 to 100;

R4 is selected from the group consisting of H, SO_3H, COOH, CH_2SO_3H, CH_2COOH, $C_2H_4SO_3H$ and C_2H_4COOH; and

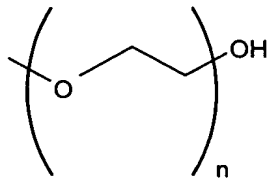
R5 is selected from the group consisting of ethyl, propyl, isopropyl, phenyl, substituted phenyl, and R4.

3. A magenta ink according to claim 1, wherein the dye has a structure as follows:



wherein R2 is selected from the group consisting of methyl, ethyl, propyl, isopropyl and halogen;

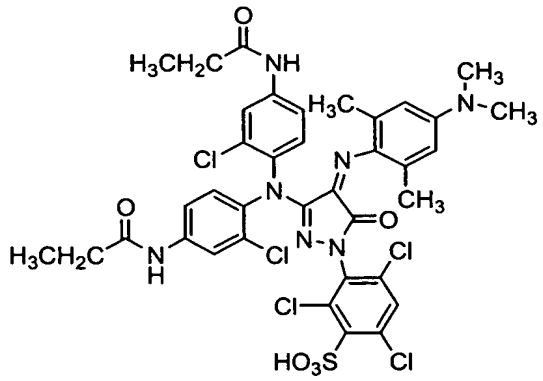
R3 is selected from the group consisting of H, SO_3H, COOH, and a polyether group



where n is from 2 to 100; and

R4 is selected from the group consisting of H, SO_3H, COOH, CH_2SO_3H, CH_2COOH, $C_2H_4SO_3H$ and C_2H_4COOH.

4. A magenta ink according to claim 1, wherein the dye has a structure as follows:



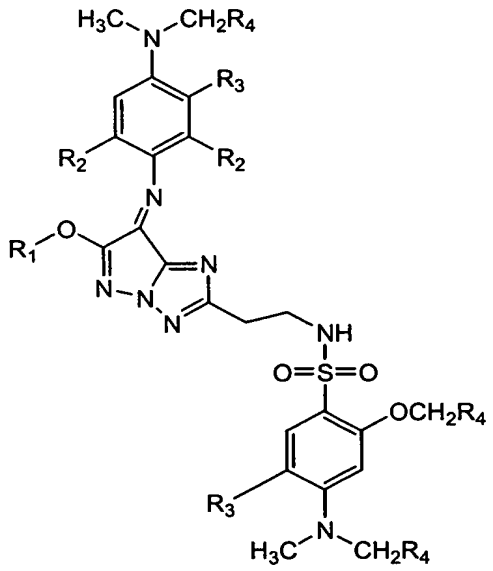
5. The magenta ink of claim 1 wherein said magenta ink comprises from about 0.5 to about 6 wt% dye.

6. The magenta ink of claim 5 wherein said magenta ink comprises from about 0.5 to about 4 wt% dye.

7. The ink of claim 1 further comprising:
about 5 to about 30 wt % of at least one organic solvent;
0 to about 2.0 wt % of at least one component independently selected from the group consisting of surfactants, buffers, biocides, and metal chelators.

8. The ink of claim 1, having a visible light absorbance of 0.01 to 0.57 at lambda$_{max}$ and at a 1:10,000 dilution in water.

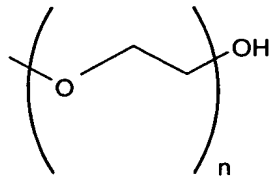
9. A magenta ink for ink-jet printing, comprising a dye having the following structure:



wherein R1 is selected from the group consisting of ethyl isopropyl, isobutyl, phenyl and substituted phenyl;

R2 is selected from the group consisting of methyl, ethyl, propyl, isopropyl and halogen;

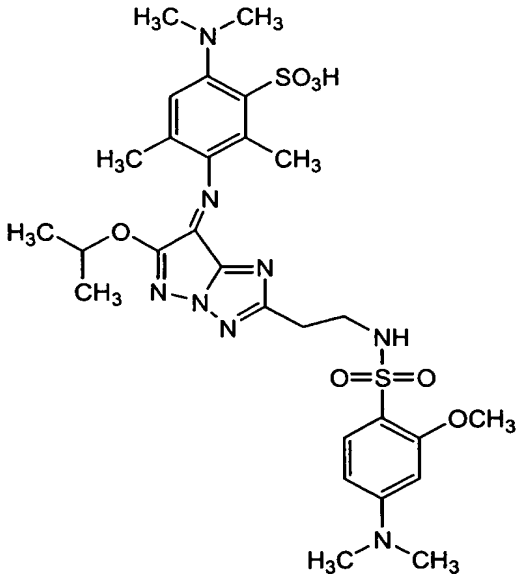
R3 is selected from the group consisting of H, SO_3H, COOH, and a polyether group



where n is from 2 to 100; and

R4 is selected from the group consisting of H, SO_3H, COOH, CH_2SO_3H, CH_2COOH, $C_2H_4SO_3H$ and C_2H_4COOH.

10. The magenta ink of claim 9 wherein the dye has the following structure:



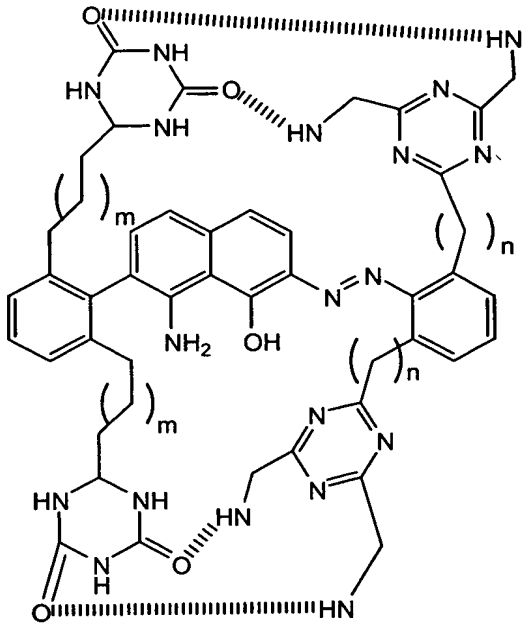
11. The magenta ink of claim 9 wherein said magenta ink comprises from about 0.5 to about 6 wt% dye.

12. The magenta ink of claim 11 wherein said magenta ink comprises from about 0.5 to about 4 wt% dye.

13. The ink of claim 9 further comprising:
about 5 to about 30 wt % of at least one organic solvent;
0 to about 2.0 wt % of at least one component independently selected from the group consisting of surfactants, buffers, biocides, and metal chelators.

14. The ink of claim 9, having a visible light absorbance of 0.01 to 0.57 at lambda$_{max}$ and at a 1:10,000 dilution in water.

15. A magenta ink for ink-jet printing, comprising a dye having the following structure:



wherein m and n are from 0 to 4 added carbons.

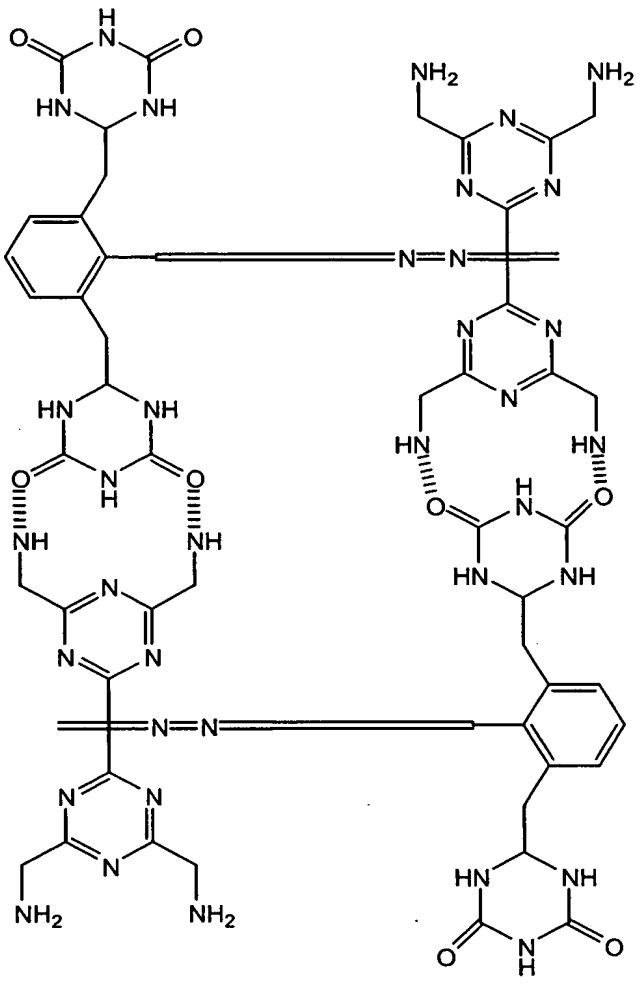
16. The magenta ink of claim 15 wherein said magenta ink comprises from about 0.5 to about 6 wt% dye.

17. The magenta ink of claim 16 wherein said magenta ink comprises from about 0.5 to about 4 wt% dye.

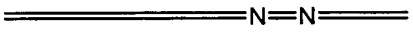
18. The ink of claim 15 further comprising:
about 5 to about 30 wt % of at least one organic solvent;
0 to about 2.0 wt % of at least one component independently selected from the group consisting of surfactants, buffers, biocides, and metal chelators.

19. The ink of claim 15, having a visible light absorbance of 0.01 to 0.57 at lambda$_{max}$ and at a 1:10,000 dilution in water.

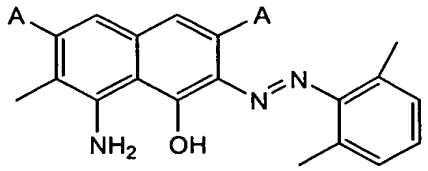
20. A magenta ink for inkjet printing comprising a dye having the following structure:



wherein

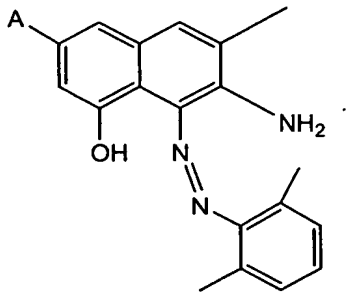


is an azo dye structure



wherein A is selected from H and SO_3H,

or a gamma acid based dye structure



wherein A is selected from H and SO_3H.

21. The magenta ink of claim 20 wherein said magenta ink comprises from about 0.5 to about 6 wt% dye.

22. The magenta ink of claim 21 wherein said magenta ink comprises from about 0.5 to about 4 wt% dye.

23. The ink of claim 20 further comprising:

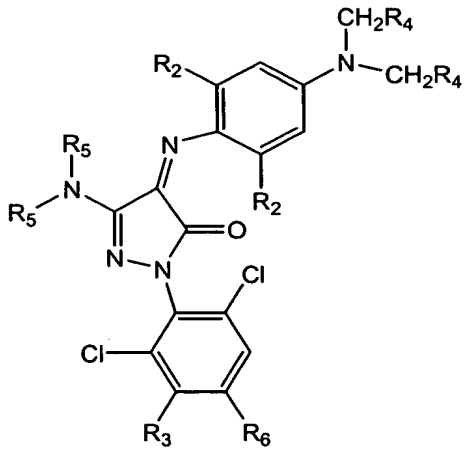
about 5 to about 30 wt % of at least one organic solvent;

0 to about 2.0 wt % of at least one component independently selected from the group consisting of surfactants, buffers, biocides, and metal chelators.

24. The ink of claim 20, having a visible light absorbance of 0.01 to 0.57 at $lambda_{max}$ and at a 1:10,000 dilution in water.

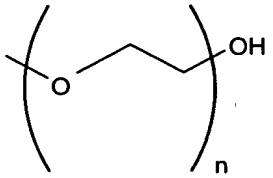
25. A method for ink-jet printing, comprising:

providing at least one magenta ink containing at least one magenta dye having a visible light absorbance of 0.01 to 0.57 at lambda$_{max}$ at a 1:10,000 dilution in water and having a structure as follows:



wherein R2 is selected from the group consisting of methyl, ethyl, propyl, isopropyl and halogen;

R3 is selected from the group consisting of H, SO_3H, COOH, and a polyether group



where n is from 2 to 100;

R4 is selected from the group consisting of H, SO_3H, COOH, CH_2SO_3H, CH_2COOH, $C_2H_4SO_3H$ and C_2H_4COOH;

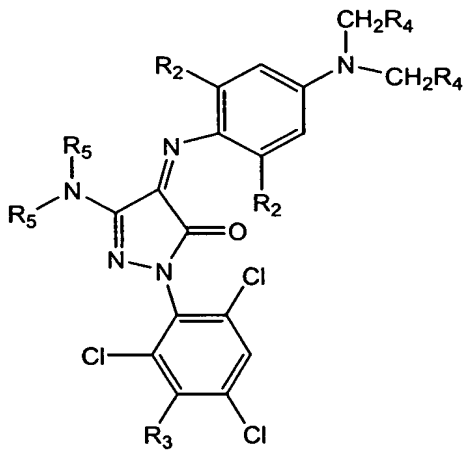
R5 is selected from the group consisting of ethyl, propyl, isopropyl, phenyl, substituted phenyl, and R4; and

R6 is selected from the group consisting of H, halogen, methyl, amino, substituted amino, R4 and R3;

and

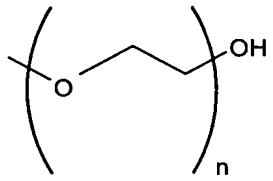
printing said ink on a printing medium by means of an ink-jet pen.

26. The method according to claim 25, wherein the structure of the magenta dye is as follows:



wherein R2 is selected from the group consisting of methyl, ethyl, propyl, isopropyl and halogen;

R3 is selected from the group consisting of H, SO_3H, COOH, and a polyether group

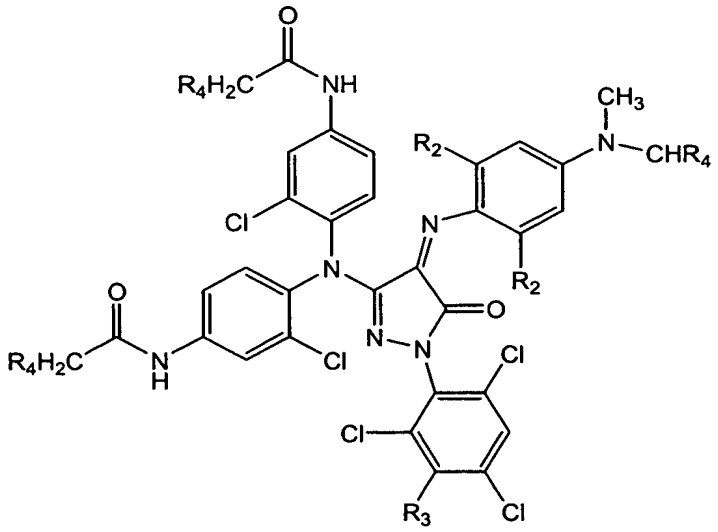


where n is from 2 to 100;

R4 is selected from the group consisting of H, SO_3H, COOH, CH_2SO_3H, CH_2COOH, $C_2H_4SO_3H$ and C_2H_4COOH; and

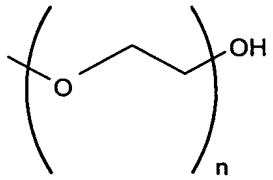
R5 is selected from the group consisting of ethyl, propyl, isopropyl, phenyl, substituted phenyl, and R4.

27. The method according to claim 25, wherein the structure of the magenta dye is as follows:



wherein R2 is selected from the group consisting of methyl, ethyl, propyl, isopropyl and halogen;

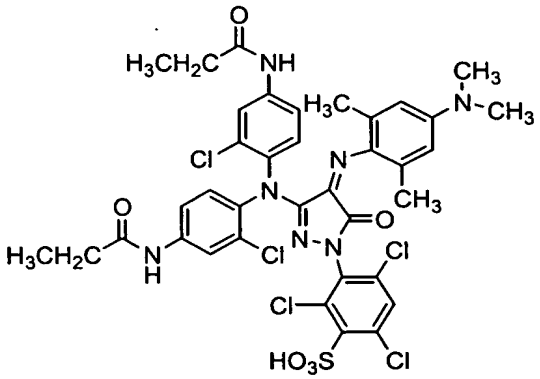
R3 is selected from the group consisting of H, SO_3H, COOH, and a polyether group



where n is from 2 to 100; and

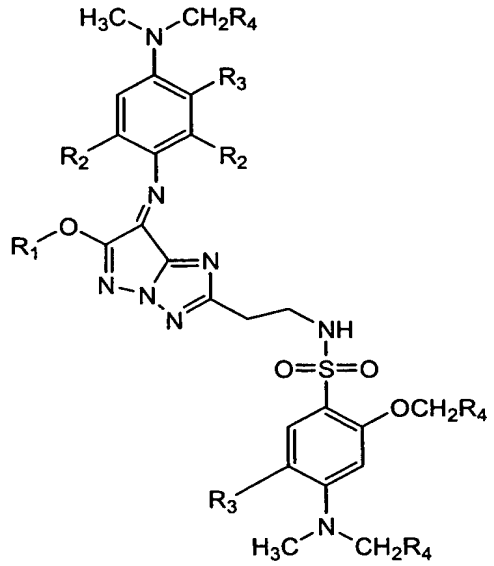
R4 is selected from the group consisting of H, SO_3H, COOH, CH_2SO_3H, CH_2COOH, $C_2H_4SO_3H$ and C_2H_4COOH.

28. The method according to claim 25, wherein the structure of the magenta dye is as follows:



29. A method for ink-jet printing, comprising:

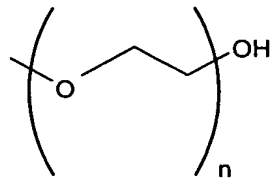
providing at least one magenta ink containing at least one magenta dye having a visible light absorbance of 0.01 to 0.57 at lambda$_{max}$ at a 1:10,000 dilution in water and having a structure as follows:



wherein R1 is selected from the group consisting of ethyl isopropyl, isobutyl, phenyl and substituted phenyl;

R2 is selected from the group consisting of methyl, ethyl, propyl, isopropyl and halogen;

R3 is selected from the group consisting of H, SO_3H, COOH, and a polyether group



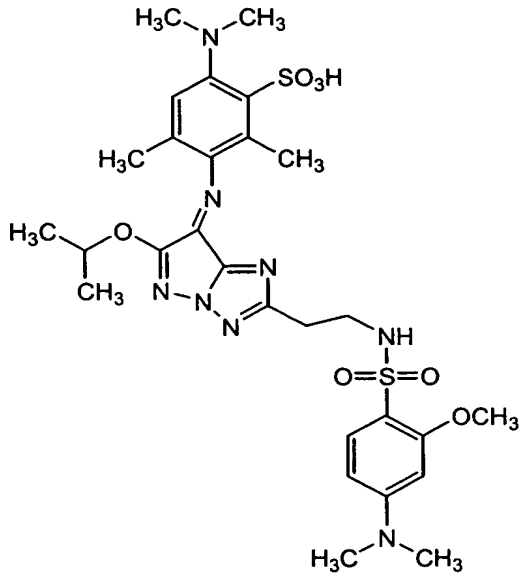
where n is from 2 to 100; and

R4 is selected from the group consisting of H, SO_3H, COOH, CH_2SO_3H, CH_2COOH, $C_2H_4SO_3H$ and C_2H_4COOH;

and

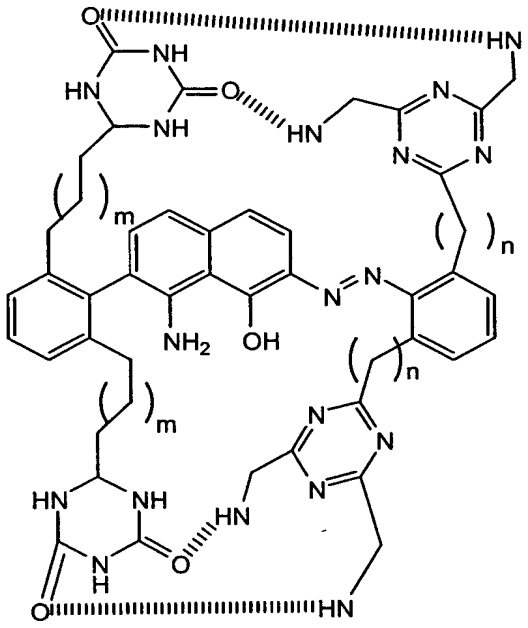
printing said ink on a printing medium by means of an ink-jet pen.

30. The method according to claim 29 wherein the structure of the magenta dye is as follows:



31. A method for ink-jet printing, comprising:

providing at least one magenta ink containing at least one magenta dye having a visible light absorbance of 0.01 to 0.57 at lambda$_{max}$ at a 1:10,000 dilution in water and having a structure as follows:



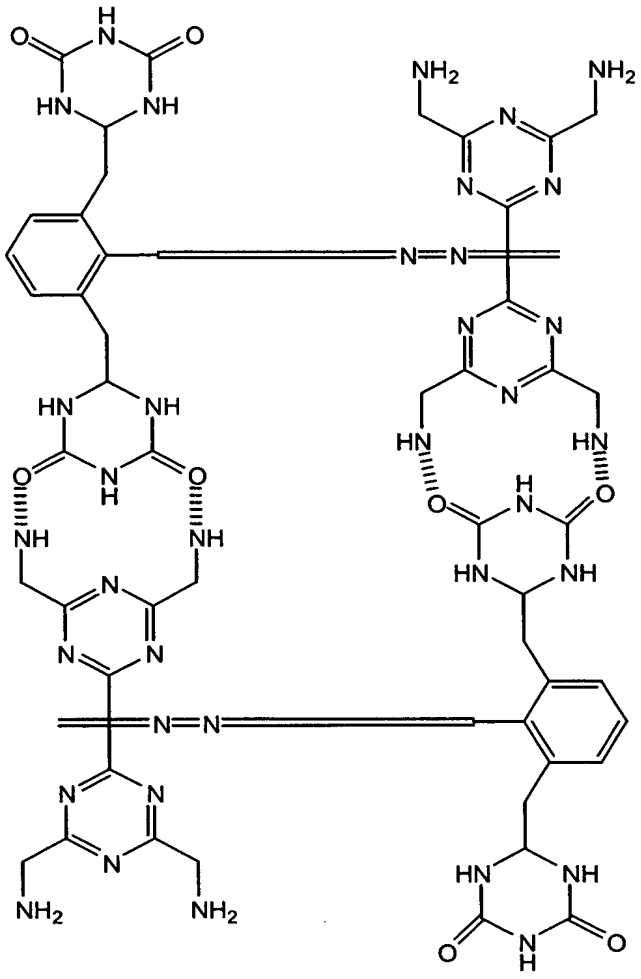
wherein m and n are from 0 to 4 added carbons.

and

printing said ink on a printing medium by means of an ink-jet pen.

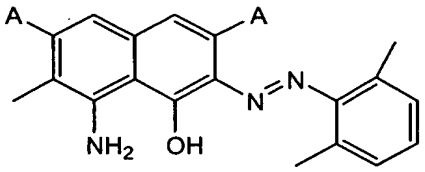
32. A method for ink-jet printing, comprising:

providing at least one magenta ink containing at least one magenta dye having a visible light absorbance of 0.01 to 0.57 at lambda$_{max}$ at a 1:10,000 dilution in water and having a structure as follows:



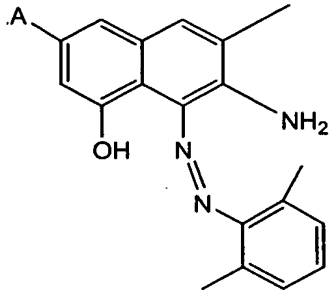
wherein

is an azo dye structure



wherein A is selected from H and SO_3H,

or a gamma acid based dye structure

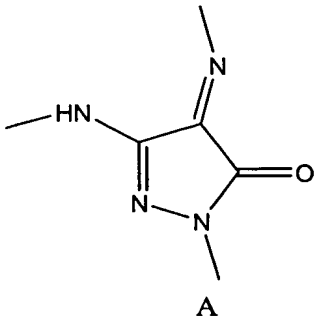


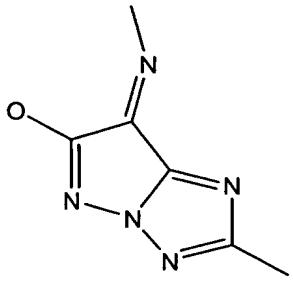
wherein A is selected from H and SO_3H.

; and

printing said ink on a printing medium by means of an ink-jet pen.

33. A method of stabilizing chromophore dyes containing imino groups, the imino groups selected from the group consisting of imino groups A and B:

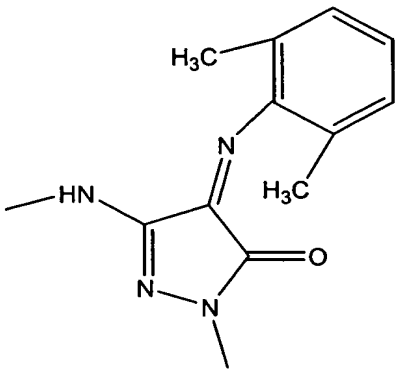




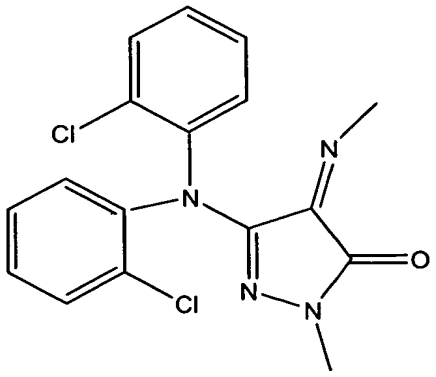
B

the method comprising adding steric groups to protect imino carbons, the steric groups being selected from phenyl, methyl, ethyl, isopropyl, fluoride, chloride, bromide and iodide.

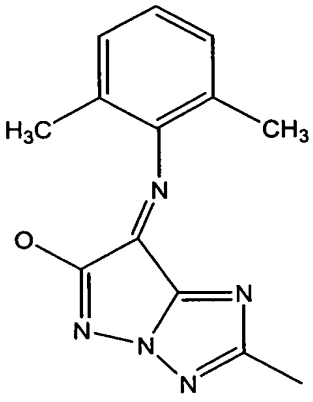
34. The method of claim 33 wherein the imino group A is protected by at least one methyl group attached ortho to an imino N-attached phenyl group:



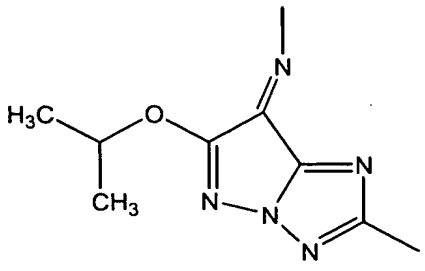
35. The method of claim 33 wherein the imino group A is protected by at least one phenyl group with at least one ortho chlorine attached:



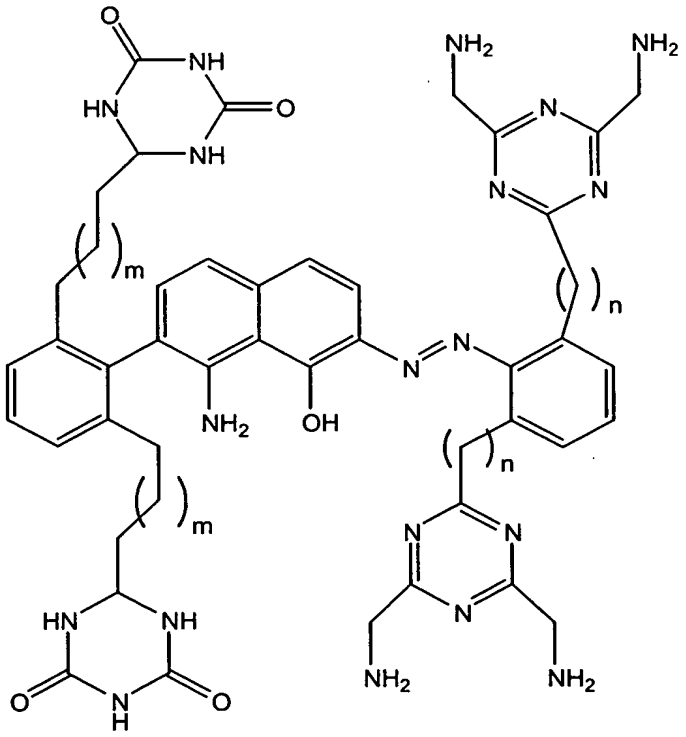
36. The method of claim 33 wherein the imino group B is protected by at least one phenyl group with at least one methyl group attached:



37. The method of claim 33 wherein the imino group B is protected by at least one O-attached isopropyl group:

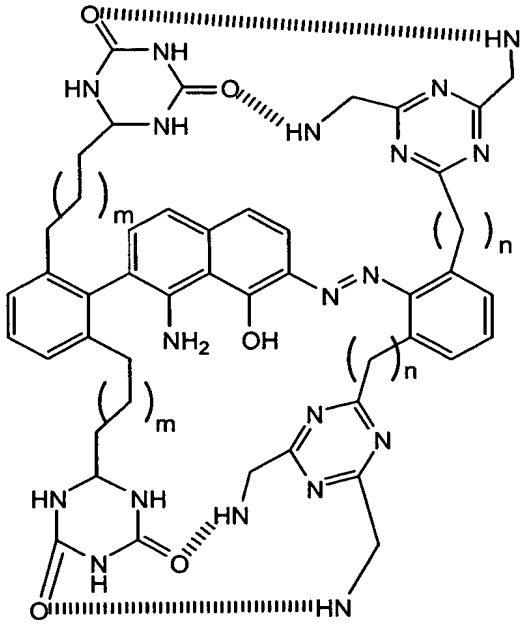


38. A method of stabilizing chromophore dyes comprising arms ending in at least one of cyanuric and melamine groups:



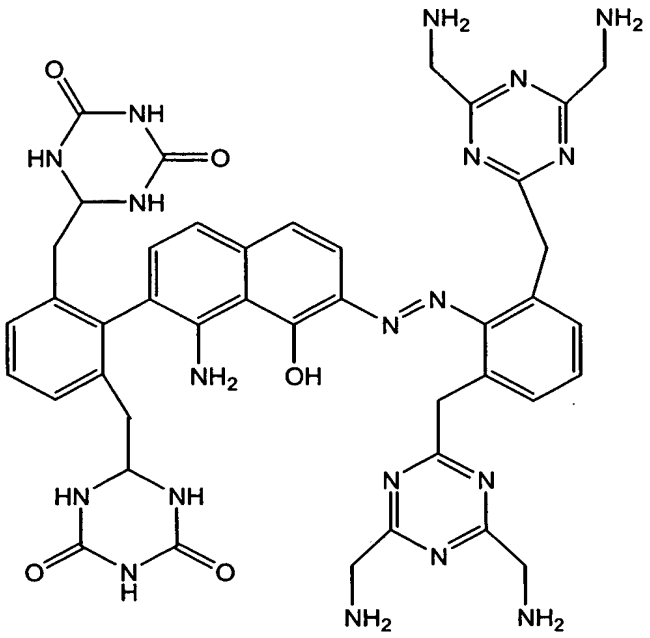
wherein m and n are from 0 to 4 added carbons.

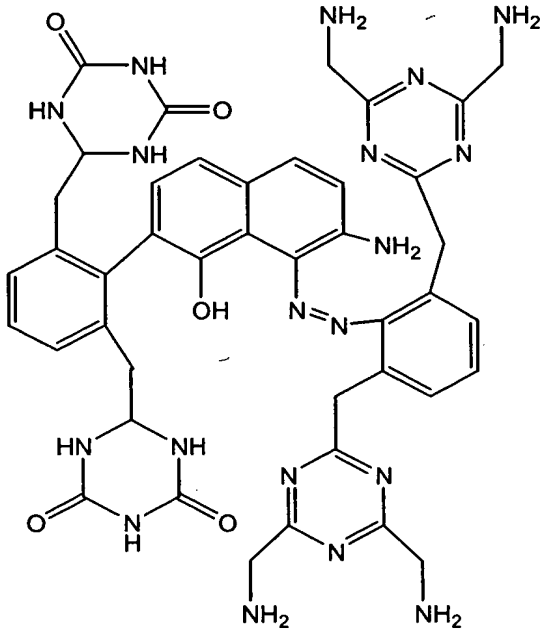
the method comprising forming intramolecular hydrogen bonds between the cyanuric and melamine groups



wherein m and n are from 0 to 4 added carbons.

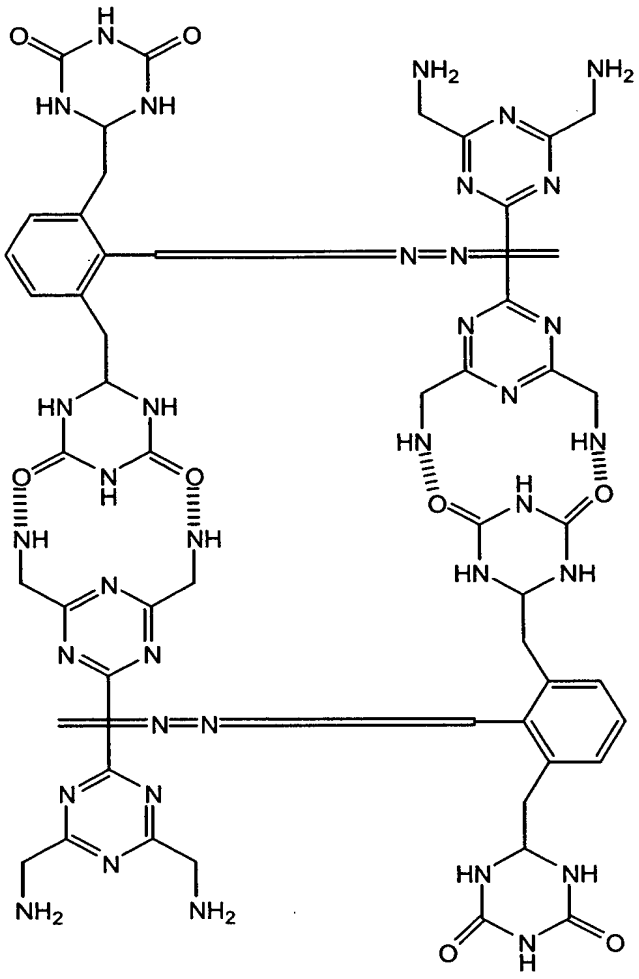
39. A method of stabilizing chromophore dyes with one of the following structures comprising arms ending in at least one of cyanuric and melamine groups:



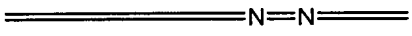


5

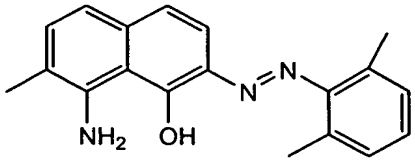
the method comprising forming intermolecular hydrogen bonds between the cyanuric and melamine groups of two different dye molecules:



wherein



is an azo dye structure



or a gamma acid based dye structure